JANNAF abstract (draft)

An Assessment of Nondestructive Evaluation Capability for Complex Additive Manufacturing Aerospace Components

The primary focus of this work is to investigate some of the fundamental relationships between processing, mechanical testing, materials characterization, and NDE for additively manufactured (AM) components using the powder bed fusion direct melt laser sintered process. The goal is to understand the criticality of defects unique to the AM process and then how conventional nondestructive evaluation methods as well as some of the more non-traditional methods such as computed tomography, are effected by the AM material. Specific defects including cracking, porosity and partially/unfused powder will be addressed. Besides line-of-site NDE, as appropriate these inspection capabilities will be put into the context of complex AM geometries where hidden features obscure, or inhibit traditional NDE methods.